REMARKS

The legend in box 802, Fig. 8, has been changed so it is consistent with page 18, lines 2-10 of the specification.

The specification has been amended so it is consistent with itself and the drawing. . The change on page 22, line 22 from "third" to --first-- is consistent with the description of register stages 1100-1102 on page 21. The change on page 22, line 28 is consistent with the expression for a′ on Fig. 11. The remaining changes to the specification are believed to be self-evident, from an inspection of the drawing.

Claims 1-31 have been canceled and replaced by claims 32-46. Claim 32, upon which claims 33 and 34 depend, is directed to a magnetic tape having multiple parallel diagonal tracks of the type employed in DDS technology, as well as the more recently introduced DAT 72 and DAT 160 technology, sometimes referred to as DDS 5 and DDS 6. The claim indicates each of the parallel diagonal tracks includes a pair of check bytes derived in accordance with the polynomial $x^2 + x\alpha^2 + \alpha$, where α is the primitive element GF (2^8), X = the value of byte k of track j, j = 1… 2 M, A, B and k = 1… P/2, where P is the number of bytes in a sub group into which N data bytes are divided. New claim 33 indicates the polynomial of claim 32 is generated by using a sub function having a mask function. The sub function for byte k of track j is derived by shifting each byte k of track j by one bit to obtain a shifted byte k value, and setting the least significant bit of each shifted byte to a value 0. If the most significant bit of each byte k has a value of one, an exclusive OR of the shifted byte with the binary value 29 is performed to obtain the value of byte k. Claim 34

provides a specific value for M.

Claim 35, upon which claims 36, 37, 41-43 depend, defines a method of reading bytes stored in diagonal tracks, M of which store data bytes and C1, C2 orthogonal redundancy coding bytes. The read tracks also include tracks A, B, each storing C3 error correction bytes coded with a Reed-Solomon error correcting code. The method comprises the steps of reading the bytes from the 2M tracks, as well as tracks A, B and performing a check sum calculation on the bytes. The check sum calculation includes processing the bytes in track j in accordance with the polynomial $X^2 + X\alpha^2 + \alpha$, where j = 1... 2M, A, B, α is the primitive element GF (2^8), X = the value of byte k in track j, j = 1... 2M, A, B and k = 1...Q, and Q equals the number of bytes in track j.

Dependent claim 36 indicates the polynomial is applied by using a sub function having a mask function. The sub function for byte k of track j is derived by reading the most significant bit of byte k of track j and shifting each byte k of track j by one bit to obtain a shifted byte value. The least significant bit of each shifted byte is set to a value of 0. If the most significant bit of each byte has a value 1, an exclusive OR of the shifted byte is performed with the binary value 29.

Claim 38, upon which claims 39, 40 and 44-46 depend, is directed to a method of writing data and error correction bytes into multiple parallel diagonal tracks of a magnetic tape. The method includes dividing N data bytes into M sub groups, each of which is formed so it has data bytes as well as C1 and C2 orthogonal redundancy coding bytes. A C3 error correcting group is formed from the M sub groups. Each of the sub groups has P bytes. Each pair of the parallel

diagonal tracks together includes one of the sub groups so that a first track of each diagonal track pair includes P/2 bytes of sub group i and a second track of each diagonal track pair includes the remaining P/2 bytes of subgroup i, where i is 1... M. The error correcting sub group is formed so it is in an additional pair of parallel diagonal tracks A and B so that byte k in tracks A and B have values resulting from byte k of the 2 M tracks being combined. Track j includes a pair of further check sum bytes derived in accordance with the polynomial $X^2 + X\alpha^2 + \alpha$, where α is the primitive element GF (2^8), X = the value of byte k of track j, j = 2M, A, B and k = 1... P/2.

Claim 39 indicates the polynomial of claim 38 is generated by using a sub function having a mask function. The sub function for byte k of track j is derived by shifting each byte k of track j by one bit to obtain a shifted byte value. The least significant bit of each shifted byte is set to value 0. If the most significant bit of byte k has a value 1, an exclusive OR of the shifted byte with the binary value 29 is performed.

The description of Fig. 8 provides a basis for dividing each group of bytes into subgroups of bytes, where each sub group includes two parallel diagonal tracks. Fig. 8 and the description thereof also indicates read out of the diagonal tracks. Fig. 8 and the description thereof indicate a subgroup of the correction code words is formed. Since each sub group is in two parallel diagonal tracks, the C3 error correction bytes in the 23rd sub group are in two diagonal tracks. The description of Fig. 10 indicates the C3 columns, each of which corresponds with a diagonal track, is formed from identically numbered bytes in each column, i.e., diagonal track. The description of Figs. 10-12 indicates two check sum bytes that are formed in registers 1100 and 1101 are put into

each column, i.e., in each diagonal track, in accordance with the polynomial set forth in the claims.

The newly submitted claims obviate the rejection based on 35 U.S.C. 112, paragraph 2. Attorney for applicant notes that an inherent property of claimed subject matter need not have an antecedent basis. MPEP 2173.05(e).

The newly submitted claims are clearly patentable over Tenengolts, U.S. Patent 4,782,490, and Lee et al. U.S. Patent 5,872,799, the references previously relied on to reject claims 1-31. Neither of the applied references has anything to do with diagonal tracks. Applicant, by using the polynomial defined in each of the independent claims, achieves a considerable advance over the prior art diagonal track coding arrangements discussed in the application in connection with Figures 4-7. These advantages are set forth in the application on page 17 lines 1-24, page 21, lines 1 and 2, and page 24, line 20 – page 25, line 9. In addition, the features of dependent claims 33, 36 and 38 provide considerable advantages as set forth in the application on page 23, lines 6-28. Because the applied prior art is not concerned with diagonal tracks having the foregoing features which result in the foregoing advantages, the submitted claims are patentable over the Tenengolts and Hall references.

In view of the foregoing amendments and remarks, favorable reconsideration and allowance are respectfully requested and deemed in order.

CONJOINED PETITION FOR EXTENSION OF TIME

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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